

ABSTRACT

An apparatus and method for measuring pollutants in a vehicle exhaust by remotely
5 sensing hydrocarbons and nitric oxide using ultraviolet light, and measuring carbon dioxide and
other pollutants using infrared light. A collimated beam of ultraviolet and a near-infrared light is
propagated across the road through the exhaust plume of a vehicle. After the light beam has
passed through the exhaust, a retroreflector reflects the light beam back. A beam splitter passes
the infrared light to an infrared detector and deflects the ultraviolet light to an ultraviolet
10 spectrometer. The ultraviolet spectrometer produces ultraviolet signals representative of the
amount of hydrocarbons and nitric oxide in the vehicle exhaust. The infrared detector produces
an infrared signal representative of the amount of carbon dioxide and other pollutants in the
exhaust plume. The spectrometer and detector send the respective signals to a processor for
calculation of the amounts of pollutants in the exhaust. A camera is used to take a picture of the
15 license plate of a vehicle that emits too many pollutants.